CLAIMS

1. A method of producing a plurality of soft contact lenses comprising the steps of:
   - A providing solid, substantially dry material, which is water-soluble above a certain temperature;
   - B forming said material into a plurality of shaped lens blanks through controlled application of physical force to the material; and
   - C hydrating said plurality of shaped lens blanks at a temperature below said certain temperature to form said plurality of soft contact lenses.

2. A method of producing a plurality of soft contact lenses according to claim 1, in which said certain temperature is approximately 50°C.

3. A method of producing a plurality of soft contact lenses according to claim 1, in which said certain temperature is approximately 65°C.

4. A method of producing a plurality of soft contact lenses according to any of claims 1 to 3, in which the said material is chosen from the group consisting of polyvinyl alcohol or a copolymer of polyvinyl alcohol and polyvinyl acetate or polyethylene-maleic-anhydride or polymethyl-hydroxy-propyl-cellulose or copolymers of methyl acrylate or ethyl acrylate with ethylene or their hydroxy derivatives.

5. A method of producing a plurality of soft contact lenses according to any preceding claim, in which said material is a copolymer of polyvinyl alcohol and polyvinyl acetate where the degree of hydrolysis, as measured by saponification, is at least 96% mol based on the original polyvinyl alcohol.

6. A method of producing a plurality of soft contact lenses according to any preceding claim, in which said material is a substantially uncrosslinked polymer comprising crosslinkable groups and in which, prior to the hydration step C, high energy is applied to said plurality of shaped lens blanks, whereby said polymer is crosslinked to a predetermined, desired crosslink density.

7. A method of producing a plurality of soft contact lenses according to claim 6 in which the material contains additives that react to the application of high energy to improve crosslinking efficiency.

8. A method of producing a plurality of soft contact lenses according to claim 6 or 7, in which the application of high energy involves irradiation of the plurality of shaped lens blanks by a form of high energy chosen from the group consisting of electron beam irradiation or gamma irradiation or microwave irradiation or ultraviolet irradiation or infrared irradiation or thermal irradiation or ultrasound irradiation.

9. A method of producing a plurality of soft contact lenses according to any preceding claim, wherein said material is provided in sheet form.

10. A method of producing a plurality of soft contact lenses according to claim 9, in which at least immediately subsequently to said physical forming step B, said plurality of shaped lens blanks remain at least partially attached to the sheet of material.

11. A method of producing a plurality of soft contact lenses according to claim 10, in which the sheet is used as a transport medium or carrying mechanism for said plurality of shaped lens blanks.

12. A method of producing a plurality of soft contact lenses according to any of claims 9 to 11, wherein said plurality of shaped lens blanks are fully removed from the sheet at a stage after step B by the use of a laser cutting device.

13. A method of producing a plurality of soft contact lenses according to any preceding claim, in which the physical forming step B is carried out using any one of the group of physical forming processes from the group consisting of thermoforming or vacuum forming or pressing or hot moulding or cold moulding or compression moulding or injection moulding.

14. A method of producing a plurality of soft contact lenses according to any preceding claim, in which said physical forming step B comprises the following sub-steps:

B.1 Heating said material to a temperature that:

a) is near to the softening temperature of the material, whereby thermoforming of said material is possible, but

b) is below the melting point of said material, whereby the physical integrity of said material is maintained; and

B.2 Thermoforming said plurality of shaped lens blanks through application of physical force to said material.

15. A method of producing a plurality of soft contact lenses according to claim 14, in which said thermoforming sub-step involves compression of the material between two forms or platens.

16. A method of producing a plurality of soft contact lenses according to any of the preceding claims, in which the physical forming step B involves the use of moulds and said material is placed between said moulds which are

pressed together to form said plurality of shaped lens blanks.

17. A method of producing a plurality of soft contact lenses according to any of the preceding claims, in which high energy is applied to said plurality of shaped lens blanks and/or to said plurality of soft contact lenses in order to sterilise them.

18. A method of producing a plurality of soft contact lenses according to claim 17, in which the application of high energy involves irradiation by a form of high energy chosen from the group consisting of electron beam irradiation or gamma irradiation or microwave irradiation or ultraviolet irradiation.

19. A method of producing a plurality of soft contact lenses according to any of the preceding claims, which comprises the further step of

D transferring the plurality of shaped lens blanks to a plurality of final packs.

20. A method of producing a plurality of soft contact lenses according to claim 19, in which, before the transferring step D, the final packs are sterilised.

21. A method of producing a plurality of soft contact lenses according to claim 19 or 20, in which, either before or after the transferring step D, aseptic or sterile solution is added to the sterile final packs, which solution acts to hydrate the lenses in step C.

22. A method of producing a plurality of soft contact lenses according to claim 21, in which the material of the shaped lens blanks undergoes a chemical reaction, such as hydrolysis, in the final pack.

23. A method of producing a plurality of soft contact lenses according to any preceding claim, in which all process steps subsequent to step B are carried out without further human contact or handling.

24. A method of producing a plurality of soft contact lenses according to any preceding claim, which method is automated or semi-automated to run in a continuous or semi-continuous manner.

25. A method of producing a plurality of soft contact lenses according to any of the preceding claims, which further involves quality control inspections on the shaped lens blanks only.

26. A method of producing a plurality of soft contact lenses according to any of the preceding claims, which involves either visual quality control inspections or quality control inspections using an optical system.

27. A method of producing a plurality of ophthalmic lenses, which comprises the following process steps:

a Providing a polymer, said polymer being a polymer that comprises crosslinkable groups, but which is substantially uncrosslinked;

b Physically forming said polymer into said plurality of ophthalmic lenses;

c Applying high energy to said plurality of ophthalmic lenses whereby said polymer is crosslinked to a predetermined, desired crosslink density.

28. A soft contact lens produced according to a method of producing a plurality of soft contact lenses according to any of the preceding claims.

29. An apparatus for producing a plurality of soft contact lenses comprising:

- a forming means for applying a controlled physical force to a sheet of material in order to form a plurality of shaped lens blanks;
- sheet material transport means for transporting a sheet of material.

30. An apparatus according to claim 29 in which said sheet material transport means comprises driven and/or undriven roller means.

31. An apparatus according to either of claims 29 or 30 in which said sheet material transport means comprises gripping means for gripping an edge of the sheet of material and guiding means for guiding said gripping means along a desired trajectory.

32. An apparatus according to claim 31 in which said guiding means comprises driven and/or undriven chain means and/or belt means.

33. An apparatus according to any of claims 29 to 32 in which said forming means comprises a plurality of forms or platens arranged so as to press together to form the sheet of material into a plurality of shaped lens blanks.

34. An apparatus according to claim 33 in which at least one of said plurality of forms or platens is provided with heating means whereby said sheet of material may be heated in order to facilitate the forming process.

35. An apparatus according to either of claims 33 or 34 in which said plurality of platens are removably connectable with a plurality of male and female inserts, which inserts are formed to appropriate shapes to form the shaped lens blanks to desired optical specifications.

36. An apparatus according to claim 35 in which the inserts are arranged such that pressure (either positive or negative) may be applied through them.

37. An apparatus according to any of claims 29 to 36 which further comprises packaging means for transferring said shaped lens blanks into final packs.

38. An apparatus according to claim 37 in which said packaging means is arranged to carry out packaging in a substantially sterile environment.

39. An apparatus according to any of claims 29 to 38, which further comprises removing means for removing said shaped lens blanks from the sheet of material and for forming the circumferential edges of the shaped lens blanks.

40. An apparatus according to claim 39 in which said removing means is a laser cutting means.

41. An apparatus according to claim 40 in which said laser cutting means comprises a CO2 laser.

42. An apparatus according to any of claims 29 to 41, which further comprises high energy application means for applying high energy to said shaped lens blanks and/or to soft contact lenses formed from said shaped lens blanks.

43. An apparatus according to claim 42 in which said high energy application means comprises an electron beam irradiation means.

44. A soft contact lens produced by an apparatus according to any of claims 29 to 43.